REMARKS

Claims 1- 21 remain pending in this application.

The Office Action rejects claims 1-3, 8-10 and 15 as being anticipated by Okamoto (US 5,965,948). However, in the reasons supporting the rejection, comments related to claims 16 and 17 as being anticipated by Okamoto are also provided. Thus, applicant has responded to the rejection as including claims 16 and 17 and has provided arguments applicable to claims 16 and 17 in addition to the arguments provided regarding claims 1-3, 8-10 and 15.

Rejection of Claims 1-3, 8-10 and 15-17 under 35 U.S.C. 102(b)

Claims 1-3, 8-10 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Okamoto (US 5,965,948).

The present claimed invention provides an integrated circuit die for a flip chip. The integrated circuit includes a die and a plurality of die bond pads situated on the die. The die bond pads are situated in rows with every other row having a bond pad spacing different than that of a bond pad spacing of an adjacent row. Routing Lines extend through every other row of the die bond pads to reach an adjacent row. Claims 1, 8 and 15 contain features similar to those discussed above.

"The size of the die is the primary driver of cost for an integrated circuit...Ways to reduce the amount of the die spent on these power busses could help reduce the size, and therefore the cost, of the die" (Page 2, lines 14-18). Therefore, the present claimed invention "takes into account the routing capabilities of the PCB and spaces every other row of bond pads such that two lines can be routed from every other row of bond pads and between the outer row of bond pads thereto. This provides a staggered spacing for the bond pads" (Page 4, lines 26-29).

Okamoto describes a method "to enhance the integration of...semiconductor device[s] used commonly for different packages...A plurality of first pads are arranged in a row on a semiconductor chip, and a plurality of second pads are arranged in another row on the semiconductor chip. One of the first pads and one of the second pads are capable of receiving the same signal. This can shorten the spacing of the pads" (Col. 1, lines 38-47).

Particularly, Okamoto describes "a semiconductor chip 41...used commonly for a TCP package and a COG package. The semi-conductor chip 41 includes TCP/COG common pads 42, TCP specific pads 43 and COG specific pads 44...When the semiconductor chip 41...is used as a TCP chip, bumps B1 are formed on the TCP/COG common pads 42 and the TCP specific pads 43...When the semiconductor chip 41...is used as a COG chip, bumps B2 are formed on the TCP/COG common pads 42 and the COG specific pads 44" (Col. 2, lines 38-62).

The Office Action asserts that Okamoto discloses adjacent bond pad rows, wherein the bond pads on adjacent rows have different spacing. A bond pad consists of a bump (small metal alloy deposit) soldered atop a pad (metal area on a die). The present claimed invention describes a die in which a bump is located atop "each pad 22...[so that they may be] electrically coupled or connected to a component" (Page 2, lines 3-4). The bond pads are configured in a first and second row. The spacing between the bond pads within a first row is different from the spacing between the solder bumps within a second row.

Okamoto, as discussed above, describes a configuration of pads in two rows. Bumps are placed atop the pads using one of two solder configurations. Thus, Okamoto describes two configurations of bond pads. In the first configuration (see Figure 5), solder bumps are placed in the first outer row of pads. Thus, bond pads are placed in a single outer row. This is unlike the present claimed invention which discloses two rows of bond pads having different spacing. In the second configuration (see Figure 6), solder bumps are placed on pads in the first and second rows. However, the distance between the solder bumps within the first row is equal to the distance between solder

bumps within the second row (2*S1). Thus, bond pads are equally spaced within a first and second row. This is unlike the present claimed invention, which discloses two rows of bond pads having different spacing. Thus, Okamoto neither discloses nor suggests "a plurality of die bond pads situated on said die wherein said die bond pads are situated in rows with every other row having a bond pad spacing different than that of a bond pad spacing of an adjacent row" as recited in claims 1, 8 and 15 of the present invention.

Additionally, each of the pad types described by Okamoto exhibit a single spacing measurement (2*S1). Okamoto is concerned with a single configuration containing three types of pads—TCP pads 43, COG pads 44 and TCP/COG pads 42. The distance between TCP/COG pads 42, as displayed in Figure 4, is 2*S1. Similarly, the distance between TCP pads 43, as displayed in Figure 4, is 2*S1. Identically, the distance between COG pads 44, as displayed in Figure 4, is 2*S1. This is wholly unlike the present claimed invention which discloses two rows of bond pads having different spacing.

Furthermore, Okamoto is not concerned with the object of the present claimed invention. The present claimed invention is concerned with routing lines through a first row of bond pads to reach a second row of bond pads. Thus, the present claimed invention spaces the bond pads within the first outer row at a greater distance than the bond pads within the second inner row. Okamoto is not concerned with routing lines. Thus, the pads described by Okamoto are placed in a configuration wherein the spacing within the outer row is smaller than the spacing within the inner row.

As claims 2, 3, 9, 10, 16 and 17 are dependant on independent claims 1, 8 and 15, it is respectfully submitted that they are allowable for the same reasons as discussed above regarding claims 1, 8 and 15. In view of the above remarks it is respectfully submitted that claims 1-3, 8-10 and 15-17 are allowable.

In view of the above remarks and amendments to the claims it is respectfully submitted that there is no 35 USC 112 compliant enabling disclosure in Okamoto showing the above discussed features. It is thus further respectfully submitted that

claims 1-3, 8-10 and 15-17 are not anticipated by Okamoto. It is thus, further respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claims 6-7, 13-14, 20 and 21 under 35 U.S.C. 103(a)

Claims 6-7, 13-14, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Mangold et al. (US 5,759,910).

Mangold et al. describe a "die bumping process which will allow fine pitch bump configurations to be provided, thereby reducing the complexity and cost of flip chip integrated circuits having a large number of input and output die pads" (Col. 1, lines 32-35).

The Office Action asserts that Mangold et al. disclose circular die bond pads. However, Mangold et al. disclose die pads wherein "the die pads 104 are arranged in two rows...The minimum center-to-center die pad spacing...is defined as the minimum center-to-center spacing 106 between inner and outer rows of die pads and the spacing 108 between adjacent die pads 104 in the same row" (Col. 1, line 62-Col. 2, line 5). Unlike the present claimed invention, Mangold et al. are not concerned with providing **different spacing** between die bond pads of different adjacent rows. Mangold et al. are concerned with a minimum center-to-center spacing distance 106. This spacing difference between die pads is the **same for each row** (see Figure 1). Therefore, Mangold et al., similarly to Okamoto, neither disclose nor suggest "a plurality of die bond pads situated on said die wherein said die bond pads are situated in rows with every other row having a bond pad spacing different than that of a bond pad spacing of an adjacent row" as recited in claims 1, 8 and 15 of the present claimed invention.

The Office Action further asserts that a combination of the systems of Okamoto and Mangold et al. would disclose the principles of the present claimed invention. However, even if one were to combine the systems of Okamoto and Mangold et al., the combined system, similarly to the individual systems, would neither disclose nor suggest "a plurality of die bond pads situated on said die wherein said die bond pads are

situated in rows with every other row having a bond pad spacing different than that of a bond pad spacing of an adjacent row" as recited in claims 1, 8 and 15 of the present claimed invention.

As claims 6-7, 13-14, 20 and 21 are dependant on independent claims 1, 8 and 15, respectively, it is respectfully submitted that they are allowable for the same reasons as discussed above in regards to claims 1, 8 and 15. In view of the above remarks it is respectfully submitted that claims 6-7, 13-14, 20 and 21 are also allowable.

In view of the above remarks and amendments to the claims it is respectfully submitted that there is no 35 USC 112 compliant enabling disclosure in Okamoto and Mangold et al., when taken alone or in combination, showing the above discussed features. It is thus further respectfully submitted that claims 6-7, 13-14, 20 and 21 are not anticipated by Okamoto and Mangold et al., when taken alone or in combination. It is thus, further respectfully submitted that this rejection is satisfied and should be withdrawn.

The applicant respectfully submits, in view of the above arguments, that the all arguments made by the Examiner have been addressed and this rejection should be withdrawn. Therefore, the applicant respectfully submits that the present claimed invention is patentable.

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No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,
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